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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,847	02/25/2005	Mitsuo Tsukamoto	Q85912	2196
23373	7590	10/18/2005	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			WU, IVES J	
			ART UNIT	PAPER NUMBER
			1713	

DATE MAILED: 10/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/525,847

Applicant(s)

TSUKAMOTO ET AL.

Examiner

Ives Wu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/25/05, 5/24/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102/103

(1). The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(2). **Claims 1 and 4-11** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Stallings (US003780007).

(3). Stallings (US003780007) discloses an improved process for preparing a fluoropolymer by polymerizing vinylidene fluoride monomers in aqueous suspension. In reaction field, vinylidene fluoride monomer is compressed and densified in supercritical state to a degree which continuously assures its uniform dispersion in the reaction medium. Optimum yield of high molecular weight and high crystalline polymer product are obtained. This process is easily adapted to the continuous production of poly(vinylidene fluoride) (Abstract, Col. 3, line 12-16). Illustrated in the Examples such as example 1, the pressure is at 2000 psig which is equivalent to 14 Mpa and reaction temperature at 55 °C. The weight average molecular weight measured by the intrinsic viscosity shown in the Table 1 is above 150,000 (Col. 6, line 42-44, Col. 8).

Specific organic peroxy compounds for initiator suitably employed include diisopropyl peroxydicarbonate, tertiary butyl peroxy pivalate etc (Col. 3, line 72 – Col. 4, line 2).

Suitable chain transfer agents employed include lower aliphatic e.g., methanol, ethanol etc, (Col. 4, line 19-39).

(4). As to the Mw/Mn of fluoropolymer of higher than 1 but not higher than 3 in the **independent claim 1**, in view of substantially identical claimed method of making the fluoropolymer disclosed by applicant and Stalling, it is the examiner's position to believe that the product of fluoropolymer made by the method of Stalling would inherently possess the molecular weight distribution from 1 to not higher than 3. Since USPTO does not have proper means to conduct the experiments, the burden is now shifted to the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

(5). As to the limitation of **dependent claim 4**, Stallings disclose the density of monomer in the water being remained around 0.69 g/cc during the polymerization, the $\rho_m/\rho_c = 1.65$ ($\rho_c = 0.47$ g/cc, Col. 3, line 8-11) in Example 1 (Col. 7).

(6). As to the limitation of **dependent claim 6**, in the absence of showing the criticality, the process optimization of monomer feeding rate to be 8 g/l at steady state is within the level of an

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ordinary skill in the art and would have been obvious. *In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA 1980).

(7). **Claims 2 and 3** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over DeSimone et al (US005824726).

(8). DeSimone et al (US005824726) disclose a polymerization process including a mixture comprising carbon dioxide and an aqueous phase (Abstract), Preferred fluorinated monomers are perfluoroolefins, particularly tetrafluoroethylene, copolymers of HFP/Vinylidene fluoride, TFE/hexafluoropropylene (Col. 3, line 57 – Col. 4, line 56). The carbon dioxide may be gaseous, liquid or supercritical state (Col. 3, line 5-6). The reaction pressure is from 500 psi to 10,000 psi equivalent to 3 Mpa to 60 Mpa (Col. 6, line 41-44) and temperature of polymerization reaction is from -50 °C up to about 200 °C. The 50:50 mixture of TFE and CO₂ is used in examples 1-11 (Col. 7 – Col. 11). The number average molecular weight is estimated from 60 Kg/mol to 1,160 Kg/mol in examples 1-11 (Col. 7 – Col. 11).

(9). DeSimone et al do not teach the molecular weight distribution to be within 1 to 3 in the **independent claim 2**, in view of substantially identical process conditions and components disclosed by DeSimone et al and applicant, it is the examiner's position to believe that the polymerization process disclosed by DeSimone et al would inherently possess the molecular weight distribution between 1 to 3 in its polymer product. Since USPTO does not have proper means to conduct the experiments, the burden is now shifted to applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

Claim Rejections - 35 USC § 103

(10). The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole

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would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(11). **Claim 12** is rejected under 35 U.S.C. 103(a) as being unpatentable over Stallings (US003780007) in view of Saito et al (US006716942B1).

As to the nonethylenic fluorocarbon in the presence of polymerization in dependent claim 12, Stallings **does not teach** the use of a nonethylenic fluorocarbon.

However, Saito et al **teach** the fluorocarbon to be present in the reaction field. Examples of the fluorocarbon are hydrofluorocarbons such as pentafluoroethane, tetrafluoroethane, difluoromethane and the like (Col. 6, line 33-38).

The advantages of employing the nonethylenic fluorocarbon in the reaction field is to dilute the monomer, to help eliminate a reaction heat and to adjust a solubility of a produced polymer into a reaction system (Col. 6, line 38-41).

Therefore, it would have been obvious at time the invention was made to include the nonethylenic fluorocarbon of Saito et al in the reaction field of Stallings in order to obtain the aforementioned advantages.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ives Wu whose telephone number is 571-272-4245. The examiner can normally be reached on 8:00 - 5:00.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on 571-272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Ives Wu

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Date: October 12, 2005


DAVID W. WU
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700